Classification of toxicity: Level 2 Effects were classified as “indeterminate” and Level 1 Effects were considered to be non-toxic. This clearly contradicts the letter sent by EPA in July 2006. [see “Level 1 Biological Effects Level” and “Page 5, Section 2.1.2, Biological Effects Definitions” comments quoted below.

Use of both models: although results from both models were presented, only the FPM approach was used in the data gap analysis. This contradicts the “Focus the Modeling Efforts**”** bullet, which suggested using the areas of model disagreement (where one model predicted toxicity and the other did not) as indeterminate, .

Characterization of the FPM Level 2 effect level models as indeterminate. There is almost no difference between the Level 2 and Level 3 models (most chemicals have the same value). We would characterize those values as “extreme effect concentration,” especially considering that the Hyalella growth endpoint was ignored in deriving the FPM. In our view, indeterminate would be between level 1 and level 2, but no Level 1 FPM values were carried forward.

PEC_Quotient approach: LWG was asked to evaluate the use of the PEC_Q approach, but rejected this without conducting the evaluation. This approach could provide useful information for indeterminate samples.

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Quotes from EPA letter to LWG in July 2006:

Focus the Modeling Efforts: This report recommends focusing on the floating percentile method for future modeling efforts. As described above, the LWG and NOAA models are in agreement approximately 75% of the time. As a result, EPA believes that both models should be utilized as complimentary lines of evidence. Areas where both models predict risk or do not predict risk should be identified as such. Areas where the models are not in agreement should be identified as areas of indeterminate risk. Areas of indeterminate risk should be refined based on other lines of evidence including empirical estimates of benthic toxicity using bioassays; comparison of benthic tissue data (empirical measurements or modeled through application of BSAFs) to tissue TRVs; comparison to consensus, empirical and/or empirical based sediment quality guidelines (SQGs); and comparison of transition zone water data (empirical measurements or modeled through application of partitioning equations) to AWQC or literature values.

Three Tiered Framework: Based on the inherent reliability problems associated with development of a single SQV, EPA recommends calculating two screening values; a low screen below which a sample shouldn’t be toxic and a high screen above which it should be toxic. Optimization should be possible at these two ends of the spectrum. As noted previously, the two models are generally in agreement in predicting very toxic samples and those that are clearly non-toxic samples. However, we don’t agree on the classification of the samples that fall in between these classifications. The values that fall in between these two classifications would be classified as “indeterminate”, and would

require empirical toxicity testing or the use of additional lines of evidence. The LRM is well suited to this. It could also be done with the FPM (as was done for the DRAFT Washington Freshwater criteria).

Level 1 Biological Effects Level: The report states "*it is recommended that Level 1 not be used to set SQVs for Portland Harbor because it is relatively unreliable in accurately predicting effects and well below the cleanup levels set at other regional Superfund sites.*" EPA agrees that Level 1 Biological Effects Level values should not be used as target cleanup levels. However, Level 1 values should not be discarded, as they represent concentrations associated with low level effects and provide useful information for defining areas of concern. The incidence of Level 1 or greater effects increases with increasing probability of toxicity.

PEC-quotient approach: The report did not evaluate the PEC-quotient (PEC-q) approach (Ingersoll et al 2001) – one of the major approaches to developing freshwater guidelines – which has been applied effectively in other Superfund remedial investigations (e.g., Calcasieu Estuary, Louisiana). A quick review of the data indicate that samples with mean PEC-q's greater than 1 show a Level 1 response or greater in at least one toxicity test endpoint in 87% of the samples and at least a Level 2 response in 77% of the samples. This suggests that the PEC-q approach may be useful in contributing to the identification of areas of concern. Evaluation of the Ingersoll PEC-q should be performed to determine if it is useful for the Portland Harbor remedial investigation.

Page 5, Section 2.1.2, Biological Effects Definitions: The report states that "*The biological effects levels used in the analyses are intended to correspond conceptually to "no effects level" (Level 1), "minor effects level" (Level 2), and "moderate effects level" (Level 3). As requested by EPA (EPA 2005a), the three levels were set at 90, 80, and 70% of the response observed in the control sediment, respectively*." The biological effect levels are mischaracterized. A more appropriate characterization would be "minor effects level" (Level 1), "moderate effects level" (Level 2), and "severe effects level" (Level 3).